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TO ALL WHOM IT MAY CONCERN:

Be it known that we, Chih-Hao Hsu and Mei-Chun Chen, both citizens of Republic of China, residing at 2nd Floor, No. 38, Low Yang Street, Sum Chung, Taipei Hsien, Taiwan, R.O.C., have invented new and useful improvements in

"COLLABORATION SYSTEM AND DATA STRUCTURE THEREOF"

for which the following is a specification.

TITLE

COLLABORATION SYSTEM AND DATA STRUCTURE THEREOF

5 ### BACKGROUND OF THE INVENTION

Field of the Invention:

The present invention relates to a collaboration
system, particularly to a data structure of the
10 collaboration system which enhances the efficiency of data
access.

Description of the Prior Art:

A collaboration system supports collaboration of
15 enterprises in a supply chain by providing a layered
framework which allows integration of business processes and
sharing of information.

FIG.1 is a diagram showing a collaboration system. The
system comprises three members 12, 13 and 14,(enterprise A,
20 B and C), a collaboration center 11, and a storage device 15
for storing a database of the system.

The operation of the system will be explained in
conjunction with FIG.1 and FIG.2. For example, when
enterprise A gives an order to enterprise B to purchase
25 products manufactured by the enterprise B, the collaboration
center 11 manages the whole process. The collaboration
center 11 accesses the database stored in the storage device
15 to obtain data 21 of a parent process for ordering. The
data 21 comprises an identification 211 of child processes,

an identification 212 of participants in the parent process
and a message 213. The parent process for ordering
comprises four ordered child processes(Order Establishment,
Order Receiving, Delivery and Goods Receiving) which are

5 identified by the identification 211. The identification
212 identifies a participant Coordinator in the parent
process for ordering. The message 213 comprises formats and
contents of the buyer's order, seller's response, delivery
notice and goods received notice.

10 Then, the child processes are implemented. The first
child process Order Establishment is implemented by
enterprise A. The member 12 accesses the database stored in
the storage device 15 to obtain data 22 of the child process
Ordering Establishing. The data 22 comprises an .

15 identification 221 of grandchild processes, an
identification 222 of participants in the child process
Order Establishment and a message 223. The child process
Order Establishment comprises two ordered grandchild
processes(Order Adding and Order Checking) which are

20 identified by the identification 221. The identification
222 identifies a participant Logistic Department in the
child process Order Establishment. The message 223
comprises formats and contents of the buyer's order and
checking results.

25 Similarly, the grandchild processes Order Adding and
Order Checking are implemented in the same way.

After the child process Order Establishment is
finished, the member 12 or 13 continues to implement the

-2-

other child processes in the order defined by the
identification 211.

Further, each member 12, 13 or 14 is allowed to
register new or modified data of their own child processes

5   in the database stored in the storage device 15. Thus, a
flexibility in the child processes implemented by the
members 12, 13 and 14 is maintained under the same
framework.

Conventionally, all the data of the processes stored in

10   the database are related through a relational table shown in
FIG.3, including Data A of a parent process, data B and C of
child processes, and data D, E, and F of grandchild
processes. The relational table 31 has columns Parent and
Child, and shows the relationship of the data A, B, C, D, E

15   and F.

However, the conventional data structure of the
database results in low efficiency of data access since the
relational table 31 must be searched from top to bottom
until the data to be accessed is located.

SUMMARY OF THE INVENTION

Therefore, the object of the present invention is to
provide a data structure of a collaboration system having
high efficiency of data access.

25   The present invention provides a method of storing data
for a collaboration system. In the collaboration system,
first and second data are respectively used for
implementation of a plurality of child processes and a
parent process comprising the child processes. The method

-3-

comprises the steps of storing the first and second data, storing a link in the first data, and linking the first and second data by the link.

The present invention further provides a collaboration system. The system comprises a collaboration center obtaining first data for implementation of a parent process comprising a plurality of child processes, a member obtaining second data for implementation of the child processes, and a storage device storing the first and second data, and storing a link in the second data to link the first and second data.

Consequently, the data of the parent and child processes are linked together instead of being related by a relational table. This avoids repeatedly searching the entire relational table every time the database is accessed so that high efficiency of data access is obtained.

BRIEF DESCRIPTION OF THE DRAWINGS

The following detailed description, given by way of example and not intended to limit the invention solely to the embodiments described herein, will best be understood in conjunction with the accompanying drawings, in which:

FIG.1 is a diagram showing a collaboration system.

FIG.2 is a diagram showing the layered process implementation framework of the collaboration system.

FIG.3 is a diagram showing a conventional data structure in the database of the collaboration system.

FIG.4 is a diagram showing a data structure in the database of the collaboration system according to one embodiment of the invention.

FIG.5 is a flow chart of a method of storing data for a collaboration system according to one embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG.4 is a diagram showing a data structure in the database of a collaboration system according to one embodiment of the invention. The collaboration system in this embodiment is the same as that shown in FIG.1 except for the data structure of the database, and has the same process implementation framework as that shown in FIG.2.

The data structure of the data base stored in the storage device 15 will be explained in conjunction with FIG.4. FIG.4 shows a data structure comprising data of a parent process and four child processes 1~4 for example. The parent process is composed of the four child processes 1~4. The child processes 2~4 implement the same activity as the parent process. More specifically, the child processes 2~4 implement the activity Order Establishment, for example, but have different grandchild processes, participants, formats, and content of messages since they are defined by different enterprises. In addition to the identification of the child (or grandchild) processes and participants, and the message, there are a process link 41, participant link 42 and message link 43 stored in the data of the child processes 1~4. The data of the child processes 1~4, the

identification of the participants and the messages therein
are linked to those of the parent process by the process
link 41, participant link 42 and message link 43
respectively. Further, there are a process link 44,
participant link 46 and message link 45 stored in the data
of the child processes 2~4. The data of the child process
2, the identification of the participants and the message
therein are linked to those of the child process 3 by the
process link 44, participant link 46 and message link 45
respectively. The data of the child process 3, the
identification of the participants and the message therein
are linked to those of the child process 4 by the process
link 44, participant link 46 and message link 45
respectively. The child processes 2~4 for implementation of
the same activity in the parent process are linked together
in a parallel arrangement.

FIG.5 is a flow chart of a method of storing data for a
collaboration system according to one embodiment of the
invention.

In step 51, data of child processes and a parent
process comprising the child processes are stored. The data
of the processes comprises an identification of child or
grandchild processes, an identification of participants in
the process and a message generated in the process.

In step 52, a process link, participant link and
message link are stored in the data of the child processes.

In step 53, The data of the child processes, the
identification of the participants and the messages therein

-6-

are linked to those of the parent process by the process
link, participant link and message link respectively.

In conclusion, the present invention provides a new
data structure of a collaboration system. The data of the

5   parent and child processes are linked together instead of
being related by a relational table. This avoids repeated
searches of the relational table every time the database is
accessed, and thus high efficiency of data access is
obtained.

10   While the invention has been described by way of
example and in terms of the preferred embodiment, it is to
be understood that the invention is not limited to the
disclosed embodiments. On the contrary, it is intended to
cover various modifications and similar arrangements as

15   would be apparent to those skilled in the art. Therefore,
the scope of the appended claims should be accorded the
broadest interpretation so as to encompass all such
modifications and similar arrangements.